The MAC Flyer
JULY 1981
INDEPENDENCE

The MAC Flyer

MILITARY AIRLIFT COMMAND

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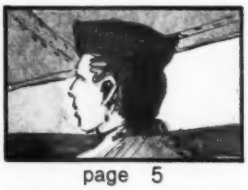

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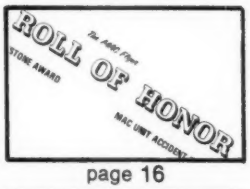

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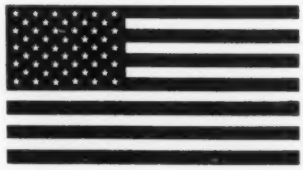
Flyer Call

With the arrival of July, most of us find ourselves engaged in the full swing of summertime leisure activities. The spectrum can include diversions as mundane as mowing the grass or as exotic as climbing a mountain. Normally, we don't devote much editorial space in *TMF* to ground safety matters, but the needless drowning death not long ago of a young pilot in a canoe accident seems to mandate at least a small break with that tradition. We're not going to belabor the obvious hazards that threaten individuals who are careless in their pursuit of happiness this summer, but we would like to try and leave you with one nugget of thought to consider. Because as crewmembers we are continually made aware of the risks inherent in flying, we tend to overlook or minimize the risks inherent in many of our activities on the ground. But injury and death are just as painful and final, regardless of how they are inflicted upon us. That young pilot who drowned when his canoe turned over is just as dead as if he had perished in an aircraft crash. He is just as tragic a loss to his family, his friends and the Air Force. Think about it, and enjoy the rest of your summer . . . safely.

JGG



A four-star approach to flying safety ☆ ☆ ☆ ☆

In the dangerous decade of the 1980s, our national air transportation system has emerged as a cornerstone of both our defense strategy and our economic viability.

Today MAC, with its military and civil air assets, provides rapid mobility for the combat forces which deter conflict and protect America's vital interests abroad. As our nation's military presence overseas has dwindled and our interests have broadened, MAC has literally become the backbone of deterrence. Fighting forces not in place are useless—we need mobility to rapidly transport and resupply them wherever they may be needed in the world.

We in MAC presently have over 1,300 military aircraft of 19 different types available, and more than 140,000 dedicated Americans working at over 300 locations in 24 countries. In a national emergency, thousands more people and over 400 additional aircraft of the Civil Reserve Air Fleet will augment us. Day to day command responsibilities include worldwide airlift, aeromedical evacuation, aerial search and rescue, weather reconnaissance and forecasting, audiovisual documentation, and transportation of the President and other high-level government officials. These responsibilities dictate that my two highest priorities are security and safety. Without both, our people and our material assets would be in jeopardy, as would America's emergency air transportation system.

Ensuring that you are safety minded at all times is not too difficult because you are highly motivated and understand the vital importance of MAC's role in projecting Americanism around the world and in preventing conflict. To help keep you motivated, however, I have a number of safety programs designed to permeate every aspect of the command on the ground and in the air.

First and foremost is my network of safety experts in every unit who personally communicate safety procedures and closely monitor the success of the safety program at the working level.

Second are the standardization and evaluation teams throughout the command which provide constant supervisory quality control of operating procedures and ensure that each of you clearly understands how these procedures contribute to safe mission accomplishment.

In addition, members of my staff make frequent assistance visits, both to reinforce safety concepts and to ensure unobstructed two-way communication channels between my various headquarters and you folks in operational units.

I augment these personal contacts with information exchange programs, printed media and aggressive awards programs.

Every month we publish *The MAC Flyer,* which as you know is dedicated to flight safety. In addition, the monthly *Aircrew Newsletter* frequently contains safety tips.

Our awards programs stress official recognition of units and individuals who perform their jobs safely. I feel such recognition is an important motivator.

The results of this many-faceted approach have been very gratifying. MAC is responsible for airlifting over 187,000 passengers, 5,000 patients, and 36,000 tons of cargo each month; yet our military aircraft mishap rate is currently less than one accident per 100,000 flying hours, and our ground vehicle mishap rate is less than three accidents per million miles driven. Those are impressive statistics, but I have no doubt that we can do even better.

I realize "zero mishaps" is not realistic, because as long as we have humans operating our equipment we are subject to some error. Also, I'm not sure we can ever achieve "zero defects" in our equipment either. Even so, I firmly believe we should all constantly strive for "zero mishaps" as our goal. Our nation depends on that approach.

ROBERT E. HUYSER General, USAF
Commander in Chief
Military Airlift Command

TMF *bids a fond farewell to General Huyser who retired from active military service effective 1 July 1981. His keen interest in flight safety was a positive force for mishap prevention at every level throughout the command.*—Ed

The Winners

1981 MAC Flying Safety Writing Contest

Forty-one officers, eleven enlisted people and one civilian produced 53 entries for the 1981 MAC Flying Safety Writing Contest. Most entrants are already enjoying their C.R. Terror T-shirts and all will begin getting their one-year personal subscription to the *Flyer* with this issue.

The top three finishers will receive a walnut desk set attesting to their literary abilities. Honorable Mention winners get a handsome wall plaque. A contest-winning story will appear in each issue of *The MAC Flyer*, and the 1981 first-place winner starts on page 5.

Competition was keen with a wide variety of prose and poetry challenging our judges. We appreciate the exceptionally high quality of the manuscripts submitted this year and recognize the hard work that went into them.

First Place

"McCAIN'S ESCAPE"

by TSgt William R. Madden
702 MAS (Assoc)
McGuire AFB, New Jersey

Second Place

"THE MIDNIGHT SPECIAL"

by Capt Gregory B. Colvin
USAF GAF Exchange Program
61st Air Transport Wing, Luftwaffe
Federal Republic of Germany

Third Place

"FIRST CHECK"

by 2Lt Ted H. Minkinow
Det 1, 1401 MAS
Offutt AFB, Nebraska

Honorable Mention Winners

"Collison"

by Maj. Richard J. Formica Jr
443 TTS
Altus AFB, Oklahoma

"A Contagious Disease"

by Maj Ryan Denny
MAC Liaison Office
US Army Combined Arms Center
Fort Leavenworth, Kansas

"Thanks For the Memories"

by Capt Stephen C. Wilkinson
97 MAS (Assoc)
McChord AFB, Washington

"You Should Have Seen the One That Got Away"

by Maj Stephen J. Zolock Jr
436 MAW
Dover AFB, Delaware

"The Rock Slips"

by SMSgt Larry L. Austin
1550 ATTW
Kirtland AFB, New Mexico

"The Expert"

by Capt Steve Demel
1550 FTS
Kirtland AFB, New Mexico

"Cleared to Climb — Unrestricted"

by Maj James E. Mrazek Jr
HQ MAC/XPSS
Scott AFB, Illinois

"Real People"

by Capt Jerry M. Brewton
Det 2, 67 ARRS
Ramstein AB, Germany

"No Free Ride"

by Capt Roger J. Purcell
60 MAW
Travis AFB, California

First Place, 1981 MAC Flying Safety Writing Contest

McCain's Escape

by TSgt William R. Madden
702 MAS (Assoc), McGuire AFB, New Jersey

With a three-hour ground time at an airfield with a museum, loadmaster McCain knew exactly where he was going. He carried the Form F from the airplane, bought sandwiches and soda, and was soon in a taxi headed for the outdoor display on the other side of the runway. Old aircraft were his hobby, and some of those he hadn't seen in the "flesh" at all. But he had read their stories, built models, and dreamed of their past.

"Two dollars please," announced the driver. McCain paid and asked the cabbie to return in one hour. He made a donation at the museum door and in seconds was out on the ramp among the imposing giants. All commands were represented, but McCain saved the best for last. After touching and peering into the fighters and bombers, he strode to the airlifter section. A sudden flurry of pigeons made him duck. They had flown out of a hole in the side of a C-133. Somewhere a loose aileron creaked and groaned in the brisk breeze. Chains held the aircraft in place, and tires bulged under tons of unrelenting weight. There was a feeling of loneliness here, and McCain realized for the first time that he was completely alone out on the ramp.

A square-jawed C-124 faced him next as he walked along, and McCain snapped pictures of it, along with all the old airplanes. For half an hour he took everything in, then, sitting with his back propped against the main tires of an old MATS transport he ate his lunch and rested. The sun was bright and warm; he hadn't felt its warmth in months. He turned his head

toward it and shut his eyes. Pigeons fluttered, other birds chirped and old airplanes made their death sounds.

A distinct "clank" broke the pattern of stillness. McCain looked for the source, somewhere behind him. He heard it again: chains clinking along a cement ramp. He peered under the belly of the airplane and saw several sets of human legs, and all of them dragging chains. McCain rushed to the nose of the airplane and cautiously peeped around to the other side.

He saw seven crewmembers in ragged flight suits, weather-beaten and gaunt in their captive chains, which were fastened to the ramp rings. One crewmember lay on the ground facing the sky. His face was blistered from the sun. The entire crew was roped off, and in front of them was a placard with display information.

"Hello, McCain," he heard one of them call to him. "Come here, boy, we can't go to you." They beckoned with their grimy hands and cracked smiles. McCain looked around for other visitors, but he was still the only soul around. He wondered if this was some kind of museum joke.

Morbidly curious, he was drawn forward, slowly and ready for anything. "This here's my crew and I'm the AC," informed the front man. They seemed to be standing at their crew positions in an imaginary airplane. The pilot and copilot stood together in the front of the column. The flight engineer stood sideways and so did the navigator. The loadmaster stood where he would normally be. And the man on the ground? "That's the other load," piped up the copilot, who saw through McCain's mind. "He's in the crew loft."

"Yeah, he wanted to rest, let him rest!" shouted another.

Cackling laughter followed this remark. "Been there long enough ain't he? Want another log on the fire, load? Hee, hee!" ranted the engineer. He twisted an imaginary dial.

McCain stood looking, silently. They were not figures out of the distant past—the flight suits were nomex, and all had the MAC insignia. The scene was eerie.

"These?" asked the AC raising his arms and referring to his chains. "Oh, we're here on punishment; I guess it's as simple as that. No one seems to notice us though. You must be special, eh? *You* notice things." The AC looked askance at his crew, as if enjoying a secret joke. McCain felt there was something evil in his voice.

Morbidly curious, he was drawn forward, slowly and ready for anything.

"We made *big* mistakes that we didn't get away with. We got caught. It's all on the placard there." McCain walked past the "DO NOT FEED" signs and quickly scanned the display placard. It was captioned, "MAC Penalty Quarters." This information followed: "The AC damaged a wingtip by not deplaning a scanner in a 'doubtful situation.' One of the zeros on this crew did not keep his eyes outside of the cockpit when he occupied the jump seat on descent; the result was a near miss. He had been too busy talking with the copilot about the hiring freeze at Trans Western. The engineer nodded off at the panel and missed an oil-low light. The loadmaster partied too close to brief time. The navigator followed other airplanes that had triple inertial, which worked until one day when he lost their contrails." His name on the sign was decorated with violations.

The AC started to rasp and cough. "Say, McCain, you don't have a smoke on you, do you? Or something to drink? Harry, speak to this boy!"

The man in back summoned the young loadmaster, but McCain kept his distance, ready to bolt away if one of the crew made a move at him.

"Do you make mistakes, McCain?" the one named Harry demanded, looking at the tourist with an icy stare. He stood among a collection of empty beer cans. His gaze finally dropped to the Form F binder that the loadmaster had unconsciously carried with him.

"Well," replied McCain, "I'm doing okay so far."

"Gimme an answer!" repeated Harry, punctuating his demand with a fierce expletive. "Throw that Form F over here!"

After climbing over the rope, the loadmaster complied, then backed off a few steps. The others had gathered close to him. Every time they moved, the chains clanked and rattled. Their faces had settled into a morose glumness. No one laughed, they only stared. The sudden change in mood was unnerving to McCain.

"Uh, huh! You came here with this load?" asked Harry.

"Yes."

"No offload, no onload?"

"Only pax. We're taking troops out of here. Already have the vehicles on. Loaded them at the last base."

"You have a restricted airplane. What are you doing with an 8,000-pound axle at station 950, smack in the middle of the restricted zone?"

Harry had found the load plan. McCain's mind raced back. Was it true? Had he checked it? He had known there might be a problem.

"I recognize that tail number," Harry growled on, "and I know that airplane. I have another question for you. Where'd you get the fuel number from?"

McCain hesitated. "I. . .I guess from the totalizer. I was in a hurry and so was everyone else. I jotted it down from the totalizer gauge instead of bothering the engineer." McCain felt like he was on trial. The chains clinked again as the crew moved even closer.

"Well, ain't you the cat's pajamas". Harry was turning purple. "That airplane has a bad fuel totalizer, consistently wrong by 6,000 pounds! *You* are supposed to add up the fuel gauges individually, not ask engineers, and not take it from any totalizer either!" Harry had pulled his chains taut and was straining toward the chastised sergeant.

"With guys like you out there, why am I here?" he blathered, in a fury. He savagely opened the Form F and tore the original copy of McCain's carefully prepared weight and balance worksheet into ribbons.

Although the thought crossed his mind, McCain felt it wise to withhold comment about the danger of FOD. He waited a few minutes, hoping Harry would calm down. The other crewmembers' faces glared at him with stark intensity. He wanted to get out of here and never come back, if only he could make a break, but he needed the Form F. Now Harry was waving it wildly in the air like he was going to throw it.

Not since basic had McCain had something thrown at him with such force. He caught it in his chest and it drove him down onto the ramp. He heard the sudden rush of the captive crew and rolled backward, away from them, and then he was up and running. They kept screaming after him.

"There's room here for you, and for others too! We have extra tie-down spots! We're due for a crew change!"

They continued their ravings until the loadmaster was out of earshot.

McCain circled around the giant airplane to where he had been sitting and remembered he had to retrieve his camera from behind the tire. As he reached back he felt a hand on his shoulder. He shouted in fear and whirled around.

"Wake up, Sergeant McCain!" Relax!" It was the taxi driver. "I know how the fellows fall asleep sometimes out here, and they have schedules to meet, so I always double check on them, and let them know I'm here, it benefits them and me, too. I'm an old airplane buff and this way I don't pay to get in."

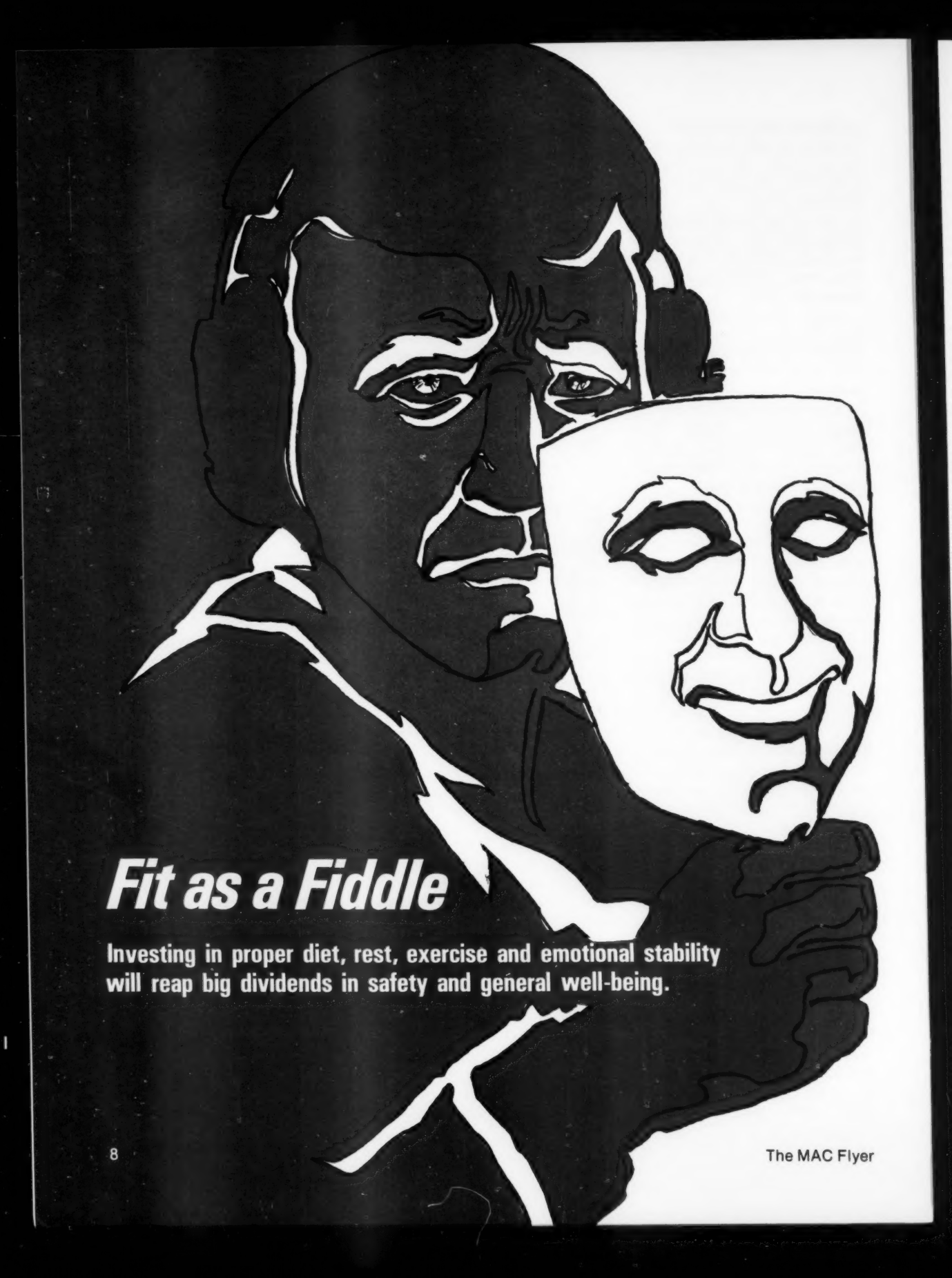
"Hey, thank you. Let's go," said the shaken loadmaster. Soon he was back aboard the Starlifter. After some consideration he ordered a load shift, to the consternation of the local cargo crew, and rechecked the fuel load, gauge by gauge. Old Harry had been right.

Nonsense! There had been no Harry, no chained crew, and none of the rest. It had only been a bad dream, that was all, sitting out there in the hot sun. Obviously, though, he needed to review his books and his amplified checklists. He *was* getting careless. The rest of this trip would be devoted to studying.

When things were humming along again, McCain poured a cup of coffee, sat down on a troop seat and opened the Form F. His jaw gaped open in disbelief at what he saw, and he turned pale. The carbon was still there, but the first page had been torn away.

ABOUT THE AUTHOR

TSgt Madden has been flying as a C-141 loadmaster with 702 MAS (Assoc) for about six years. In civilian life, he pursues a variety of interests, including flying jobs for two small airports near his home in northern New Jersey where he puts his Commercial Pilot's certificate to good use. He substitute teaches in the local schools and is a graduate of Fairleigh Dickinson University in Madison, New Jersey. He also managed to squeeze in a little writing between his other favorite hobbies of hunting and fishing—this makes his forth story to garner a prize in *TMF* writing contests.



Fit as a Fiddle

Investing in proper diet, rest, exercise and emotional stability will reap big dividends in safety and general well-being.

Under absolutely ideal conditions, a pilot is as finely tuned as a violin. The trouble is, pilots like fiddles, can get out of tune. And it doesen't take a broken leg or a heart attack to put a person on the fritz.

Pilots gone slightly sour need a tuning job immediately. If they don't get one, they may land somewhere besides the strip they were aiming for, bend up their air machine, or plunge three counties into darkness by dragging down several miles of high tension power lines. When such catastrophies take place, many people converge on the scene to investigate. The aircraft is pieced back together, witnesses are questioned, and weather data and performance charts are consulted. If the pilot happens to survive and is available for comment, the hapless aviator also has his or her brains thoroughly picked. Every stone for miles around is turned at least once, but all too often the investigators can only pack up their exhibits and statistics and move on, dolefully muttering "pilot error."

Pilot error? There is more here than meets the eye. Investigators know that as well as anyone else. The term is a broad one and covers a multitude of sins and mysteries of human behavior. Is simple ignorance, for example, pilot error? An error can only be committed by a person trained to know better. Experts sometimes refer to this kind of mistake as the "human factor" behind mishaps, that is *everything* the pilot did or failed to do that led to a crash. And why? The *why* is often the most mysterious part. Many times pilots can't even say why themselves. If they could, they probably wouldn't have crashed in the first place.

But here is the unvarnished truth: A person who has performed a simple action the right way hundreds of times can suddenly do it exactly backwards with no apparent reason for having done so. An old hand who could fly a barn door if he really put his mind to it fouls up on final and strips the landing gear from beneath his aircraft. What goes on here? The answer is that mishaps involving the "human factor" occur when the people at the controls are not functioning the way they should. They are out of tune, running a little rough, developing a ping. Nothing seriously wrong and nothing that can't be fairly easily fixed; but they're left ripe for the conditions investigators normally chalk up to "pilot error."

Nobody wants pilots to turn into do-it-yourself flight surgeons or psychologists.

The medics, the commander, the instructor, other pilots in the outfit can all easily spot a person in the clutches of Asian flu, smoker's cough, or terminal dandruff. No trouble at all. Pilots with obvious ailments are kept on the ground until they're cured. But spotting a person just slightly out of whack, ready for one of those sudden reversals of form that confound everybody, is not quite so simple. They may be out of tune physically, emotionally, or both, and still appear normal to the naked eye. They may act as cheerful as a chipmunk and yet be gnawed sick on the inside over marital problems or the condition of a sick child. Or they may be ready to blow their top because they've been hassled by the inlaws, and still look as serene as a poker player with four aces.

The human being is a complicated critter and some emotional disturbances are brought on by causes so deep that pilots themselves may not even know they're there. All of us are compounded out of such a mess of instincts, fears, anxieties, resentments, frustrations, reactions and desires that it's a wonder we operate at all; or have enough sense to come in out of the rain. But we do—most of the time—and we usually make out all right. Still, if one of our inner anxieties gets out of hand, maybe without our even being conscious of it, we can be in for trouble.

Take this business of flying airplanes. For all of us, it's an unnatural act. Man is a creature of the land, designed to operate on the *surface* of the earth. He may get used to being airborne after a while, but he will never be fully at home aloft. What's hard to face is the fact that most people share a touch of natural fear or apprehension about being up there with the birds.

Older pilots know this uneasiness is just something that has to be lived with. Placed in proper perspective, it turns into healthy caution, a respect for the peculiar problems of flying. They also know this uneasy feeling can assume such proportions it can cloud a pilot's judgement. So far as we know, few recorded mishaps can be laid directly on outright fear of flying, but there is no way of telling how many young pilots right now are repressing an abnormal apprehension that may someday bring

them to grief. What begins as uneasiness can turn into the freezing kind of fear which causes a sudden reversal or brings on the false move that upsets all the right moves a person has been trained to make.

Nobody wants pilots to turn into do-it-yourself flight surgeons or psychologists, but a capacity for mature self-appraisal is a valuable asset. And a very important part of that capacity is knowing or realizing when the time has come to seek out somebody else for aid and comfort. A curious truth is that the strong, silent type is very often the first one to fly all to pieces or find their blood pressure shooting off-scale high because they feel it's a weakness to get something off their chest. The very first person somebody troubled in body or mind ought to turn to is his or her mate. For those without mates, or separated from them by duty requirements, there are friends, fellow crewmembers, roommates, or professionals you can approach. While you may consider these poor substitutes for a mate, they can and usually will lend a sympathetic ear—but only if you initiate the process. There's a saying that every person needs a confessor, somebody they can tell their troubles to. Worry causes confusion and discomfort; confiding usually brings relief. With a load off your mind, your efficiency in the air goes up sharply.

All of us have days when it seems like it just doesn't pay to get out of bed. So what do we do on those days? Sit tight, take a couple of deep breaths, and face the fact that this just isn't going to be our day. Apply the brakes—extra caution is definitely in order. Since everybody is different from everybody else, there is no exact yardstick by which humans can measure just how far off the mark they are at any given time. People whose day started off badly can only check the way they feel now against the way they usually feel and behave accordingly. The important thing is that you stop and take a long, cool look at the situation.

Even feeling *good* can be bad! Has your mean but rich uncle in Seattle finally cashed in his chips and left you loaded? Have the powers-that-be recognized your true merit and come through with a well deserved promotion? Cause for rejoicing to be sure, but if you're flying that day, you've got to keep a firm grip on yourself.

With a load off your mind, your efficiency in the air goes up sharply.

Complacency or inattention, whether caused by boon or bane, can lurk behind the error that lies behind the mishap. Nobody can put their finger on precisely how many crackups are caused by letting high or low spirits cloud judgement, but it is a safe guess that some of them are. Everybody admires people who whistle while they work—the trick is not letting the whistling, or the worrying, take up more attention than the job at hand.

What crewmembers eat, or fail to eat, is another factor behind many pilot error mishaps. The dietary carelessness of some folks, young and old alike, never ceases to amaze doctors. The nourishment a person takes in is directly related to their efficiency as a human "machine." After all, the human body, like a machine, operates on the energy generated from the food (fuel) it takes in. A body needs fuel just like an aircraft does, and it has to be the correct "octane," too. Nobody ever attempted to fly an airplane fueled with dishwater and old ground-up rubber boots. Still, some people who laugh at that idea don't give much thought to what kind of fuel they consume themselves. They either eat too much, too little, or improperly. The human body works on the glycogen stored in the liver and produced by glucose, a first cousin of lactose, or blood sugar. Carried by the blood, glucose—or blood sugar—is a highly desirable substance to have floating around in one's insides. In fact, if anybody's blood sugar drops below a certain point, *anybody* is in trouble—*anybody*.

Remember you're the one with what the airline people call "pilot responsibility." Your passengers, crew, and their families, your life, and the happiness of all those households are strictly in your hands. However, if any crewmember makes one small slip it may bring tragedy to a great many people. The longer people fly, the more emergencies will come along to test their abilities. Only a finely tuned, responsible—and responsive—aviator can continually cope with the normally strenuous requirements of flying plus any problems that may arise.

—Adapted from U.S. Army *Flightfax*

FLYER FORUM

This Way Out

by MSgt William Wood
Life Support Superintendent
21 AF, McGuire AFB, New Jersey

Recent fires in several large resort hotels have identified an egress problem that is common to all conflagrations, including those occurring in airplanes: In an emergency, people tend to react like a herd of sheep. This may seem to be an advantage, but when one person finds an emergency exit or escape route, this group reaction can take over and in many instances people have lost their lives in the ensuing crush. In fact, over the years, thousands of lives have been lost in fires due to overcrowding at exits, when in many cases alternate escape routes were available.

But there is a way to combat this tendency and save many lives. The secret is having a thorough knowledge of *all* available routes of escape and complete familiarity with how to operate the exits. How many times have you seen a demonstration of the way to open an emergency exit or door on an aircraft as part of the passenger briefing? Even though pointing out the exits is required, it's left to the passengers to figure out how to open them in an emergency. In a state of panic, even the simplest "turn and pull" instructions can be very difficult to accomplish unless a person has actually seen it done or has had hands-on training. And relying on crewmembers to always be there to open exits and guide passengers out in an orderly manner doesn't seem to be a realistic assumption, as we have learned from past crashes of both commercial and military aircraft. They could be injured or occupied somewhere else.

When an emergency unfolds, the awesome fear of smoke and fire takes control of everyone's mind and the urge to react as a group grows. Suddenly, whether the passenger briefing was improperly given or simply fell on deaf ears because people didn't want to contemplate such unpleasant possibilities, ignorant passengers* begin acting in shear panic and making a bad situation worse. At this point there is little the trained and experienced crewmember can do. And being caught up in the middle of such circumstances could very well cost the aircrew member his or her life as well.

Every time you read accounts of fires where people are trapped and die—or escape because they took the correct measures—remember that the "lucky" ones were those who knew all the emergency escape routes and had the presence of mind to use them and not necessarily follow the crowd. Crewmembers that use their training and knowledge of emergency actions, escape routes and exits, and give the most informative and complete passenger briefings they can are increasing the passengers' chance of survival in a fire.

** Ignorance is the result of not knowing something and it can be cured by learning. Stupidity, however, is incurable. Both can be fatal.—Ed.*

ASR: Easiest to Fly, But Hardest to Land From

by Capt Charles M. Westenhoff
22 TASS, Wheeler AFB, Hawaii

Flying airport surveillance radar approaches is a real piece of cake: You don't have any decisions to make until the controller advises "over missed approach point, if runway not in sight . . . " and then the decision is easy. The controller gives you altitudes and headings, and will tell you the published minimum descent altitude (MDA). If you request, the controller can also provide recommended altitudes for a gradual descent to the MDA. All the work of other non-precision type approaches is performed by the controller and fed directly to brain, via ear. All you have to do is follow instructions, configure the airplane, and land.

But the catch is the landing. The missed approach point can be as close to the runway as the threshold. The height above airport (HAA), however, is always at least 250 feet, and frequently much higher. Let's say you're landing from an ASR approach at Rhein-Main's runway 07R. At minimums (700 feet HAA) you see the airport at 1.2 miles. You're about six degrees above the horizon as seen from the threshold. Rather than invite disaster by dropping out of the sky, you use a three-degree glide angle. In doing so, you have just subtracted over one nautical mile from the runway available to you for landing. Of course, if you waited until the threshold you would be too high above the runway, and a three-degree glide path would put you more than two miles down the macadam at touchdown—obviously not recommended.

Neither is a steep approach recommended. The smart way to take advantage of the ASR is to figure a visual descent point (VDP). It will give you an approximate distance from the airfield where you must be able to see the runway in order to descend at a comfortable and controllable angle for making a safe approach. Since they don't publish VDPs for ASRs, it will take some planning. If you are shooting an ASR in lousy weather, a little VDP forethought can give you an edge on the safety factor. To compute a VDP, simply divide the hundreds of feet in the HAA (5 for an HAA of 500) by the number of degrees of glide path you want to use. If you're landing at Torrejon, for instance, the HAA is 500 feet. If you use a 2.5-degree approach angle, you have to see the runway by two miles. If you figure the steepest angle you'll feel comfortable with—say four degrees—you'll have to see the runway by 1.25 miles. Now, if the visibility is less than a mile (still legal for Cat, A, B and C), you won't see the runway 'till after your VDP. But let's say the visibility is reported as two miles, so you elect to go ahead and take a shot. However, slant-range visibility doesn't have any bearing on reported vis, and at 1.25 miles you still may not be able to see the field. The controller will keep on giving you instructions until you get to the missed approach point, but why bother? If you do finally see the runway at the MAP, you'll be too high for comfort or maybe even safety, so an early go-around would be appropriate.

The real value in figuring a VDP comes from preparing yourself mentally for what you'll see at a given distance. If you know that after a certain point you'll be too high to land safely, you won't be tempted to try. On your next local training flight, try an ASR to minimums and see what it looks like. It'll be almost too easy to fly, but at the missed approach point, you'll probably feel uncomfortable—especially if you can see the runway directly below you. Then try figuring a VDP and see the difference a little forethought makes. It's just that type of planning that makes pilots professionals—and grandparents.

Flying Circus

Step right up! Here we go with another potpourri of peculiar and pernicious machinations manifested by errant aviators or imposed upon them by negligent support folks. As you read along, it should become clear that the only thing keeping most of these crazy situations from becoming full-blown disasters is a favorable wink from dame fortune. Without further ado, we launch this chronicle of quasi catastrophies with a shocking account of what happened to one careless pilot when he unwittingly abetted an explosive marriage between sparks and avgas fumes.

Assault with a Battery

When he discovered his aircraft battery was dead, the owner of a Cessna Skywagon decided to use a spare battery and jumper leads to crank up his airplane engine, and then run it to recharge the installed battery. Placing the spare on the ground just ahead of the left main wheel, he connected it to the aircraft battery. Then he decided to refuel the Cessna before attempting to start the engine, so he disconnected the jumper leads from the installed battery and left them lying on the ground still "hot." After carting several drums of avgas to the airplane, he commenced refueling the left tank using a double-action hand pump and a plastic hose. The hose had no nozzle, there were no metal fittings on the end of it, it was not bonded and it had no grounding straps. The owner inserted the hose into the tank, climbed down from the wing and began pumping. The vibration of the vigorous pumping action caused the hose to wiggle out of the tank and fall on the ground, where it came in contact with either the battery or the jumper leads. A static discharge from the plastic hose or a spark from the shorting terminals—nobody knows for sure which, and it really becomes academic at this point—ignited the spilled avgas. A large fire broke out around the nosewheel of the Skymaster, and before the hapless owner could scare up some fire fighting equipment

and help, the conflagration was too intense to be approached. Just in case there might have been any hope of extricating the doomed utility plane from a fiery demise, one of the unopened fuel drums under the right wing exploded in the intense heat, finishing the skywagon off completely.

Geronimo!

Takeoff and climbout were normal for the B-52, but nearing leveloff the navigator asked the pilots for a lower cruise airspeed. Swapping his excess airspeed for altitude, the copilot increased the Buff's pitch slightly and then found he was going to overshoot his assigned altitude. Trying to avoid the overshoot, he abruptly retarded the throttles and honked the control yoke forward to get the Stratofort's nose back down. His cowboy technique produced enough negative Gs to make crewmembers light in their seats and cause small unsecured items in the cockpit to float around momentarily. Although nobody up front was concerned by what was going on, the gunner, who was all alone at the defense station, became alarmed at the bomber's gyrations. For some reason he wasn't able to contact anybody on interphone to find out what was happening. When it began to feel to him like the airplane was out of control and had entered a steep spiraling dive, he decided it was time to abandon ship and he punched out post haste. The crew heard the muffled bang of the ejection seat, and the gunner was long gone when the navigator went back to see what had happened. The B-52 landed safely back at its home base, and the quick-on-the-trigger gunner was picked up later in good condition walking down a country road.

Slatstick Comedy

The Airbus was making a heavy takoff at 327,000 pounds, and the configuration was flaps zero degrees, slats 16 degrees. It was nighttime, weather was IFR, and the ceiling was about 800 feet. The captain made a normal takoff and followed the A300's flight director on climbout. He called for "gear up," accelerated to slat-retract airspeed, and then called for "flaps up," forgetting that the flaps were already set at zero. Thinking the call was for "slats up," since that was the only thing left to raise and the aircraft was at slat-retract airspeed, the first officer hoisted the slats. The captain maintained the same deck angle, airspeed decreased to less than slat-retract airspeed, and at 1,500 feet the stall warning sounded off. By then airspeed was five to eight knots below that required for slat retraction and the flight director commanded an immediate pitch down for the big jet. Angle of attack was reduced, slats were reextended, and amazingly enough, the Airbus didn't even lose any altitude in the process of the pilots getting things sorted out. Luckily for these chaps in their moments of marginal competence, the flight director was on the ball and nothing else went wrong.

Sage Advice

Here's one of those ancient aviation anecdotes which has been knocking around the system for awhile, but it usually is good for a chuckle or two anyway. The most recent version we've seen uses airline types as the two principal characters. If that bothers you, just substitute AC for Captain,

Scott AFB for Miami, Midwest for Florida, etc.

A new Captain, upon arriving at Miami, sought advice from an experienced Old Head on how to best handle Florida's ferocious thunderstorms. The High Timer's sage advice was, "In the morning, when you are heading north from Miami and encounter thunderstorms, always turn west. But in the afternoon when you're heading south, always turn to the east."

"Will this always help me avoid the storms?" asked the newcomer.

"Nope," entoned the Voice of Experience, "but it will keep the sun out of your eyes."

Water, Water, Everywhere

This Navy pilot nearly got to log some "drink" time in his TA-4 when he blanked out while airborne. As he dozed peacefully, his unguided jet headed eastward out over the Atlantic Ocean at 17,000 feet. When the pilot finally revived, all he could see below him in every quadrant was open sea. He judiciously turned to a heading of 270 degrees, but couldn't get an immediate tacan lock-on or make contact with anybody on his last assigned radio freq. A few anxious minutes later he did get a vortac lock-on indicating he was over 150 miles away from land. On the way back in, he was intercepted by two F-106s which had been scrambled after he overflew his coastal destination and was mysteriously headed out over the briny depths. By the time he finally landed safely back at his home aerodrome, he was down to a squeeky 390 pounds of fuel. The cause of his temporary incapacitation? Once again it was that old culprit—attempting to perform self-medication compounded in this case by questionable judgment. With a total of only four hours of rest, and suffering from a cold, he had taken a cold capsule and two antihistimines before going out to fly an all-day cross-country mission. After leveling off at 17-grand, on his last leg of the day—and nearly of his career—he removed his mask and turned off his oxygen flow switch. The rest you already know.

Breathtaking Bathrooms

After passengers started complaining about strong odors in the airliner's lavatories, the crew made an investigation. When they found out what the problem was, they also made a hasty emergency landing at the nearest useable runway. Somebody had serviced the rest rooms with gasoline instead of water!

Hot Fur Coat

Pesky petrochemicals caused another airline crew some anxious moments when a passenger's fur coat which had been put in the hat rack unexpectedly burst into flames. Seems that the passenger had stuffed a tissue saturated with nail polish remover into the coat pocket. The acetone in the remover reacted with the coat's nylon liner and, poof! Somebody had one of the hottest fashion furs in town.

The MAC

ROLL O

MAC UNIT ACCIDENT-FREE FLYING-HOUR MILESTONE AWARD

700,000 HOURS

76 MAS

500,000 HOURS

14 MAS

450,000 HOURS

41 MAS

440,000 HOURS

75 MAS

400,000 HOURS

3 MAS
6 MAS

350,000 HOURS

4 MAS

300,000 HOURS

1 MAS
58 MAS
86 MAS
137 TAW (ANG)

250,000 HOURS

57 MAS
375 AAW

200,000 HOURS

53 MAS
446 MAW (Assoc)

160,000 HOURS

9 MAS

150,000 HOURS

16 TATS
136 TAW (ANG)
403 RWRW (AFRES)

120,000 HOURS

64 TAS (AFRES)

100,000 HOURS

1 HS
36 TAS
55 WRS
97 MAS (Assoc)
183 TAS (ANG)
185 TAS (ANG)
303 TAS (AFRES)
327 TAS (AFRES)
440 TAW (AFRES)
445 MAW (Assoc)
463 TAW
1400 MAS
1401 MAS
1402 MAS

C Flyer

OF HONOR

MAC UNIT ACCIDENT-FREE FLYING YEAR MILESTONE AWARD

As of 31 December 1980

30 YEARS OR MORE

1 MAS
64 TAS (AFRES)

25 THROUGH 29 YEARS

76 MAS
303 TAS (AFRES)
312 MAS (Assoc)
327 TAS (AFRES)
704 TAS (AFRES)

20 THROUGH 24 YEARS

1 HS
3 MAS
6 MAS
14 MAS
57 MAS
96 TAS (AFRES)
97 MAS (Assoc)
137 TAW (ANG)
156 TAS (ANG)
167 TAS (ANG)
180 TAS (ANG)
183 TAS (ANG)
185 TAS (ANG)
301 ARRS (AFRES)
303 ARRS (AFRES)
305 ARRS (AFRES)
313 MAS (Assoc)
731 TAS (AFRES)

10 THROUGH 19 YEARS

4 MAS
9 MAS
36 TAS
Det 5, 39 ARRW
Det 11, 39 ARRW
Det 15, 39 ARRS
Det 1, 40 ARRS
Det 5, 40 ARRS
Det 6, 40 ARRS
Det 18, 40 ARRS
Det 22, 40 ARRS
41 MAS
53 MAS
53 WRS
54 WRS
55 ARRS
55 WRS
58 MAS
63 TAS (AFRES)
Det 9, 67 ARRS
68 TAS (AFRES)
71 ARRS
73 AAS (Assoc)
75 MAS
86 MAS
94 TAW (AFRES)
95 TAS (AFRES)
130 TAS (ANG)
135 TAS (ANG)
136 TAW (ANG)
139 TAS (ANG)
142 TAS (ANG)
143 TAS (ANG)
144 TAS (ANG)
158 TAS (ANG)
164 TAS (ANG)
181 TAS (ANG)
300 MAS (Assoc)
301 MAS (Assoc)
315 MAW (Assoc)
326 MAS (Assoc)
328 TAS (AFRES)
335 MAS (Assoc)
337 TAS (AFRES)
356 TAS (AFRES)
357 TAS (AFRES)
403 RWRW (AFRES)
440 TAW (AFRES)
445 MAW (Assoc)
446 MAW (Assoc)
459 TAW (AFRES)
700 TAS (AFRES)
701 MAS (Assoc)
728 MAS (Assoc)
729 MAS (Assoc)
730 MAS (Assoc)
732 MAS (Assoc)
756 TAS (AFRES)
758 TAS (AFRES)
932 AAG (Assoc)

Mishap with a Moral

The chances of success for this aircrew's untimely go-around attempt after racing too far down the runway was a . . .

Long Shot

Warm trade winds were blowing across St. Thomas Island from the southeast at about ten knots. The tower at Harry S. Truman Airport reported scattered clouds at 2,500 feet with a few more drifting to the northwest at 12,000 feet. Temperature was a sunny 84° F—a beautiful tropical afternoon in the Virgin Islands.

For Flight 565, inbound from New York on a regularly scheduled commercial passenger run, it had been an uneventful trip. The 81 passengers were anxiously anticipating stepping out into the warm Caribbean sunshine after New York's unseasonably chilly spring weather.

During the descent from FL 330, the flight engineer prepared the landing data card using forecast information provided earlier. He computed a reference approach speed (V_{ref}) of 117 knots for a standard 40° flap setting plus a 120 knot V_{ref} for a 30° setting in case of "strong or gusty winds."

About 15 to 20 miles north of St. Thomas, the flight crew cancelled their IFR clearance with San Juan Center and changed to St. Thomas control tower. The captain, however, chose to fly the ILS to runway 09 so he could use the glide slope to assist him in vertical guidance during the approach to the 4,658-foot-long strip.

After getting established on the ILS, flaps were set at 25°, landing gear extended and the airspeed reduced toward desired approach speed. At 1,000 feet the captain called for 30° flaps. Although an enroute weather check at St. Thomas had included surface winds of 120° at 12 to 14 knots, no gusting was reported, and during the approach the wind was reported as 120° at 12 knots. Airspeed was reduced to V_{ref} plus 10 to 15 knots for the 30° flap setting and was maintained all the way down. The big tri-jet crossed the runway threshold 30 to 40 feet above the ground. As they went by another 727 sitting in the number one position awaiting takeoff clearance, Flight 565 ran through a patch of turbulence which caused the right wing to drop suddenly and required almost full opposite aileron to return the wings to a level position. At the same time, the aircraft was observed floating down the runway about 10 feet off the surface before finally landing 2,700 feet beyond the threshold. Because of the long landing the captain decided to go around and moved the throttles forward while monitor-

ing the engine pressure ratio (EPR) gauges for signs of acceleration. After waiting five seconds and sensing no engine acceleration or appropriate increase in EPR above about 1.2 or 1.3, the left-seater abandoned the go-around, closed the throttles and applied the wheel brakes. The aircraft continued across the 500-foot overrun, striking the ILS localizer antenna and tearing through the perimeter chain link fence. Still moving at high speed, its right wingtip dug into an embankment adjacent to the fence, ripping a portion of the wing off. Continuing across a road which ran parallel to the perimeter fence and destroying several vehicles in its path, the 125,000-pound juggernaut plowed into a gasoline station and nearby warehouse where it finally came to rest in a fiery mass of twisted metal.

The post-crash fire sealed the fate of 35 of the passengers and two crewmembers who suffered fatal injuries from a combination of impact trauma, smoke inhalation and third-degree burns. Seventeen other passengers and two other crewmembers received serious injuries, along with a passenger in an automobile at the service station. The aircraft was completely destroyed by the impact and subsequent fire, with the cabin breaking up into three separate pieces.

NTSB investigators concluded that the probable cause of the accident was the captain's actions and his judgment in initiating a go-around maneuver with insufficient runway remaining after a long touchdown. They further concluded that the long touchdown was attributed to a deviation from prescribed landing techniques and an encounter with an adverse wind condition common at that airport.

Opportunities Lost

Had the captain initiated a go-around as soon as control was regained after encountering the turbulence, the accident could have been avoided. A second chance to prevent the catastrophe came when the captain decided to abandon the go-around and land. If he had applied maximum performance stopping procedures initially to decelerate the aircraft, investigators determined, he could have stopped the 727 on the remaining runway. In addition, when the accident became inevitable, the pilot still had an opportunity to lessen damage to the aircraft and reduce impact velocity by employing maximum performance stopping procedures, including lowering the nose wheel to the ground, extending the spoilers and using max reverse thrust.

Flap Setting and Long Landing

Because of the captain's previous experience at the airport, he operated on the assumption that *any* southeast wind at St. Thomas would be gusty, and accordingly used a 30° flap setting for the approach and touchdown, even though gusty winds were not in the forecast, nor reported by the tower during their approach. Although the company directive which allowed 30°-flap approaches specified strong *or* gusty winds as the criteria, leaving room for misinterpretation, the effect of using a reduced flap setting was to increase the landing distance. Also, there was no company requirement to bleed off the extra 10 knots routinely carried on final so that touchdowns would occur closer to V_{ref}.

Engine Acceleration and Go-Around

The captain didn't think the engines were accelerating properly after advancing throttles for five seconds, so he abandoned the go-around. But acceleration of the engines from idle to takeoff power normally requires about 6.3 seconds anyway, and at five seconds, normal acceleration would increase the EPRs to about 1.4—very close to the readings the crew later reported. Besides, the practice of first "standing the throttles up" to stabilize the EPRs above 1.0 and then advancing them further actually increased the total acceleration time and ate up an estimated additional 500 feet of runway.

Combining these facts with the computed runway required to become airborne, the Board concluded that a successful go-around could not have been made when the captain attempted it. But, if max braking performance had been used, even at that point, nothing would have prevented the aircraft from being stopped—most likely in the available runway remaining and certainly within the confines of the overrun.

Turbulence

Occurring when the aircraft was still about 10 feet above the runway, the unexpected turbulence disrupted the normal expected sequence of events. The

captain later admitted he was "programmed to land," but the aircraft was still floating well beyond the normal touchdown point when turbulence was encountered. With the big jet fast approaching the point from which a go-around would have been dangerous, if not impossible, the captain probably had less than 5 seconds to evaluate the situation and take corrective action.

Aircraft Performance and Decision Making

The captain's decision to initiate a go-around may well have been based on his previous experience with takeoffs at St. Thomas, where normal takeoff rotation is made about 3,500 feet after roll begins from a standing start. And since the aircraft was about 500 feet from a point at which it was normally rotated when the captain decided to go around, and his airspeed was at or within 3 or 4 knots of "normal" rotation speed for the go-around maneuver, his experience could have led him to believe that it was a viable course of action. However, the aircraft's decelerating condition and the spooled-down state of the engines altered the situation significantly. This lack of knowledge of the aircraft's performance capability impaired the captain's ability to make the correct decision. Also, in his later decision to abandom the go-around, the visual perception of the buildings near the airport perimeter and the surrounding hills helped create the appearance that the remaining distance was inadequate. There is no evidence that either pilot looked for the distance-remaining markers alongside the runway.

Decision-making under extreme stress and in the face of imminent personal danger may create certain behavioral changes in people designed to extract them rapidly from such a situation without having to go through the slower reasoning process. The Board sighted literature that identifies a so-called emergency mechanism and which may be detrimental because it cancels the reasoning function in situations where quick but deliberate responses are necessary. Because of this, when a well-learned response (such as a go-around), which training and experience has taught the pilot to believe is effective, instead makes the situation more dangerous, the mechanism is triggered, the sense of danger increased and decisions requiring deliberate reasoning are less likely to be made. This may be why the captain later stated that he did not know why he didn't use all available deceleration means. Investigators believe that intensive training is the most effective means to counter the effects of this emergency mechanism. They concluded that had the captain been exposed during training to critical go-around situations and the maximum performance stopping capabilities of the aircraft by means of flight simulation and lectures, he might have reacted appropriately to this terrifying and, as it turns out, completely avoidable tragedy.

—Adapted from NTSB-AAR-77-1

Caffeine: A Necessary Evil?

Are you abusing this ubiquitous drug.

Gear up, feet up, pass up a cup of coffee, please." Sound familiar? It probably does, because it's a good bet that MAC flyers are the unofficial champion inflight coffee drinkers of the Air Force. Coffee contains caffeine, which has both good and bad effects on your body, and like any other drug it can be abused.

USAF physiologists at the School of Aerospace Medicine have made a study to determine the actual caffeine practices of crewmembers. Their survey results provide an opportunity for you to examine your own practices in relation to the sample population.

The aerospace physiologists found that about 80 percent of the crewmembers in their sample consumed some coffee, with about 26 percent of that group at the three-to-four cups per day level, 17 percent at the five-to-six cups per day level and about 8 percent consuming more than eight cups per day. The majority drank regular coffee, brewed at average strength and sweetened with sugar. Only 7 percent were habitual saccharin users and less than 2 percent used sweeteners containing cyclamates.

For Americans, coffee, tea and cola drinks are the top three sources of caffeine. Some of the stimulant is routinely removed during the processing of all coffee, with the greatest amount of caffeine remaining in regular coffee, followed by instant, decaffeinated regular, and decaffeinated instant coffees. Ironically, the caffeine that is removed from coffee is often repurchased by people in drugs such as cold pills, because decaffeination is a major source of caffeine for the chemical and drug industries.

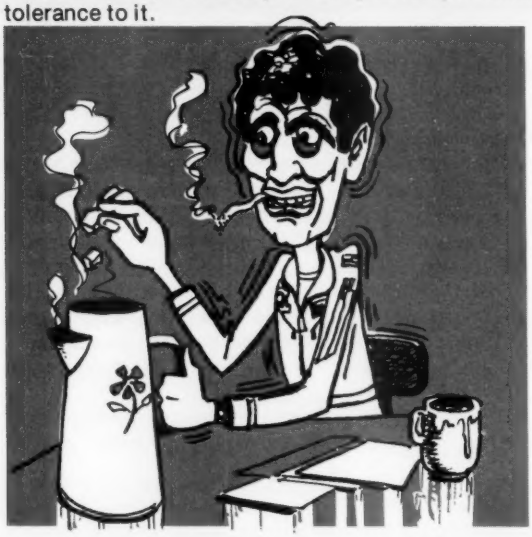
Many people regard caffeine as a safe stimulant and therefore pay little attention to the quantity they consume. Even though caffeine-loaded beverages, foods, and drugs people ingest are an expensive part of their life, most of the "users" are unaware of their degree of addiction. Without being sanctimonious or presumptuous about the possible hazards of using too much caffeine, or most any other substance, we must emphasize that moderation is always an important rule for good health.

Chemistry of Caffeine

Biochemists know caffeine as a member of the xanthine family, the compounds comprising humanity's oldest stimulants. When extracted in its pure form, caffeine is a shiny white powder. This weak alkaloid is closely related to morphine, nicotine, cocaine, purines and strychnine. The structural formula, $C_8 H_{10} N_4 O_2$, with minor rearrangements of the atomic groups, accounts for the three principal forms of methylated xanthines found in coffee, tea and cocoa.

Caffeine is only mildly physically addicting in the sense that withdrawal will not harm you or

produce violent symptoms. It can, however, produce physiological and psychological dependence and may not be easily discontinued. It takes more caffeine to get the same effect with continued use, because your body develops some tolerance to it.



A powerful central nervous system stimulant, caffeine has these characteristics:

- Antidepressant
- Stimulant
- Maintains wakefulness
- Affects muscles (cocoa has greatest effect on isolated skeletal muscles)
- Causes increased peripheral blood flow by vasodilation and decreased flow of blood to the brain.
- Does not significantly affect objectively measured intellectual performance.
- Does affect speed of accomplishment of motor tasks, up to an individual maximum dose level.
- Tolerance is slow to develop and slow to disappear.

Exactly how caffeine works is largely unknown. One theory says that it inhibits the production of the chemical, phosphodiesterase, which in turn increases the rate of hormone reaction. While the mechanism is not entirely clear, it also plays a role in the vigor of muscular contraction by affecting the release of calcium in the cells.

Recent research at the Johns Hopkins School of Medicine indicates that caffeine affects your brain by countering the influence of a chemical called adenosine. Adenosine normally depresses nerve cell firing in many areas of the brain. To do its job, the chemical must first bind to specific receptors on the membranes of nerve cells. Caffeine is chemically similar to adenosine, and readily bonds to the nerve cells, blocking adenosine's effect, so the cells can react more readily than they otherwise would.

Are You Really Hooked?

To determine if your consumption of caffeine-laden beverages is based on addiction, you can attempt to quit consuming the drug. If you consume four or more cups of coffee every day (or their equivalent in other caffeine-laced substances), you may try absolute abstinence from caffeine. This means no coffee, tea, cola drinks, APCs, cold pills, chocolate or other foods containing caffeine—read the labels. This can be difficult and should not be attempted when you face situations that demand your top performance, such as a long trip at night on the highways or airways. It would be better to go "cold turkey" while on vacation or during some other break from your demanding daily routine. After abstaining from caffeine for 24 hours, note your symptoms and set out for another caffeine-free 24-hour period. It takes about seven days to clear the caffeine from your system. The drug withdrawal symptoms are not widely known because very few people have tried this experiment, and fewer yet have completed it! If you can go for long periods without caffeine, you probably weren't physiologically addicted. Another word of caution: When withdrawing from caffeine, count your calories, because you may tend to put on weight.

After 12 to 18 hours you may note headaches and general restlessness, disquiet, anguish or even aching pains. Some people can complete withdrawal with very few ill effects, but they are usually in the minority of users who dump caffeine into their biosystems only on an occasional basis—about one cup of coffee per day or equivalent.

How Much Is Too Much?

Although it is probably harmless when used at low dose levels, there is increasing interest in caffeine accumulation at high ingestion levels. It may be related to a variety of acute and chronic nervous and physical conditions. Because so many people use caffeine from a variety of sources, and because it is mixed with many artificial flavors and colors in foods and drinks, it is difficult to clearly define all of its possible interactions. Environmental factors such as radiation, pollution and industrial byproducts add to the complexity of the problem.

All of the following undesirable reactions are

attributed to regular consumption of large doses of caffeine:

- Insomnia
- Sense of dread or depression
- Anxiety
- Fatigue
- Loss of balance
- Faulty thinking
- Finger tremor
- Increased reaction time

Recent research has also discovered:

- Caffeine slows repair of DNA molecules, the basic building blocks of cells.
- Benign breast lumps in some women disappear after caffeine is removed from their diet.
- Caffeine crosses the placenta and reaches an unborn baby. It has caused birth defects in laboratory rats.

The approximate values of caffeine per 6 oz cup serving. Some variation will occur because of differing strengths of brew.

Coffee	**100 mg/cup**
Instant Coffee	**60 mg/cup**
Decaffeinated	**3 mg/cup**
Tea (theophylline)	**75 mg/cup**
Instant Tea	**30 mg/cup**
Cocoa	**6-40 mg caffeine/cup**
	200 mg theobromine/cup
Cola	**60 mg/cup**

In regular coffee the method of preparation causes considerable variation in strength.

Automatic	**15 mg/cup**
Dripolator	**142 mg/cup**
Electric perk	**104 mg/cup**

In general, caffeine content relates to the finest grind for coffee, or the smallest leaf parts for tea. This is because a greater surface area is exposed to the brewing water.

Another reason it's difficult to isolate the way caffeine affects human physiology is because a majority of people who drink coffee also use tobacco and alcohol. The role of these substances in your body is very complex, and an important job of future research will be determining their interactions in detail.

Only about 4 percent of heavy smokers drink no coffee at all. Among those smoking more than a pack a day, about 40 percent drink more than 6 cups of coffee per day. There may be an underlying physical reason for this pattern. Coffee-drinking cigarette smokers take more nicotine into their systems when they ingest no caffeine. Also, as measured in urine and saliva, smokers get rid of more caffeine. Since caffeine is a circulatory dilator and nicotine is a vasoconstrictor, their reciprocal relation may explain why using one causes clearance of the other from the body. Also, withdrawal from either caffeine or nicotine causes lassitude, headaches and irritability.

The relationship between caffeine and cardiovascular problems seems weak when considered by itself. Caffeine doesn't appear to significantly affect blood lipids or cholesterol levels. Although many people who use alcohol also use coffee and smoke, there is a stronger association between alcohol and smoking than between alcohol and coffee. Also, the use of tea seems to stand entirely by itself. Other heart problems like cardiac arrhythmias, ectopic beats and atrialtachycardia are more likely to happen to people who are tired and under the influence of stimulants.

Caffeine may also be related to accidents related to sleep deprivation. This probably happens to caffeine addicts who frequently arise early, drink coffee until about 2:00 p.m. and soon after begin their evening alcohol consumption.

As a crewmember you should remember that caffeine is not a harmless drug that can be safely consumed in unlimited quantities. Physiologists say that more than four cups of coffee per day, or more than 400 mg of caffeine in a 24-hour period, may be beyond the upper safe limit. You should review your present caffeine consumption and set realistic goals of moderation or abstinence.

Caffeine can be essential for aircrew members when consumed in moderation during situations demanding optimum vigilance. On the other hand, overuse after missions may impair adequate rest and contribute to unnecessary fatigue on the next day's flight. Like most things we associate with the "good life," coffee and caffeine are being added to the ever-growing list of things that are harmful to us if abused.

A tip of the TMF *flight cap to Colonel Richard B. Pilmer, Chief of the Aerospace Physiology Branch, USAF School of Aerospace Medicine, Brooks AFB, Texas. Colonel Pilmer granted us permission to adapt his article, "Caffeine—Drug of Abuse in the Eighties?" and supplied additional information from professional journals to help us update the article. He is a graduate of UCLA and holds a PhD in Physiology from Ohio State University.—Ed.*

DEJAVU

Diego Garcia, Chagos Archipelago (UK)

(elevation 9 feet)

Diego Garcia is a tropical atoll located in the middle of the Indian Ocean. Surrounded by a huge chunk of uncontrolled airspace, the airfield is run by the US Navy. Diego's single runway (13/31) is 12,000 feet long, 150 feet wide and has 1,000-foot overruns at both ends. Only JP-5 fuel is available, and speaking of fuel, the FLIP Enroute Supplement recommends carrying at least one hour's worth of holding fuel whenever heavy rainshowers are predicted for your arrival time.

Instrument approaches include tacan, VOR and NDB, but no precision approaches are available. The airfield has standard runway lights with a short approach light system and sequenced flashers for runway 13. There are no ramp lights.

Approaches are especially hazardous at night or in poor visibility. The runway is almost completely surrounded by water and presents few visual cues. Without visual or instrument glide path guidance, it is very important for crews to control their rate of descent and altitude properly on final approach.

Once on the ground, crews will find the parallel taxiway closed, so back-taxiing on the runway may be necessary. Ramp space is tight and shared by many different types of Navy and USAF aircraft.

Because of its location, Diego Garcia is important and MAC crews can expect to continue carrying vital cargo there in the future.

From three miles on final for runway 13, the airfield complex is visible.

On short final to runway 13, the ramp is to the left. Note the aircraft parked on the closed parallel taxiway.

C-5 on the ramp with USAF and Navy vehicle.

C.R. TERROR

C.R. gets himself into another scrape while flying his first Stretch Starlifter mission.

Most of the crew was assembled at the squadron ops counter when C.R. pulled the mission flimsy sheet out of the trip kit. "Good grief, look at the number of stops on this itinerary," he carped loudly, "It's worse than a 'Klong' shuttle."

"Lemme see," chimed Blinky, the navigator and Long Suffering Sam, the copilot in unison.

"Read it and weep, lads," said C.R. "This just about guarantees that we won't be on station for Colonel Rheem's going away party."

"That means we won't be here to give our favorite ops officer a royal roast and a rousing sendoff into retirement." sighed Blinky.

"You got it, Magellan," affirmed the Portly Pilot. "The only chance we have of making it back is to press like crazy and maybe, just maybe, we'll get around the horn in time for the festivities tomorrow night. Any breakdowns or delays, though, and we can forget it."

"We should have a fair to midlin' chance," commented Sergeant Torque, "our winged chariot this trip is a brand new B-model."

Preflight on the Stretch Starlifter was accomplished with maximum dispatch, and almost as fast as you could say "Before-Starting-Engines Checklist complete," it was. The Terrorific Turbine Turner ignited the TF-33s one after another in rapid succession, and when everything and everybody was up to speed, C.R. eased the big bird out of the blocks.

"How many trips have you made in a B-model, boss?" asked Sam as they followed the bright yellow line off the ramp and onto the parallel taxiway.

"Been around the flagpole a couple of times, did a couple of landings and got my qualification ticket punched on a local," replied the Terrorific Transitioner testily. "Why do you ask?"

"No reason in particular, it's just that there are a couple of things I've noticed you have to watch out for because these Stretches are a little different in some respects from the A-models," explained the copilot diplomatically.

"Hey, mister copilot, I'm well aware of such idiosynchrasies as wider swing, tail growth, etcetera, etcetera, etcetera, in this new, improved bugsucker, so don't worry about it, okay?" blustered the Huffy Honcho in mock indignation.

"Sure thing, boss," said the squelched right-seater, "Before-Takeoff Checklist complete."

"Pratt and Whitneys do your stuff," yelped the animated throttlebender as he cobbed in full power for takeoff. Even though it was heavily laden with cargo and passengers, the elongated Starlifter coursed down the runway, lifted into the air and climbed with the same gusto it had before its Lockheedian metamorphosis. They

were barely leveled off at cruise altitude long enough for the Nicotine Addicted Aviator to torch up a gold-ring Egyptian Oval and reduce it to ashes before it was time to begin descent for their

first destination of the day. "Davis-Mothball coming up at 12 o'clock low," announced C.R. "Let's get the descent checklist out of the way."

"We're cleared for the ILS approach to runway 30 at D-M, and to descend and maintain 11,000 feet," reported Sammy, who had copied the clearance on VFH while C.R. was busy on UHF trying to line up some ground support for the offload.

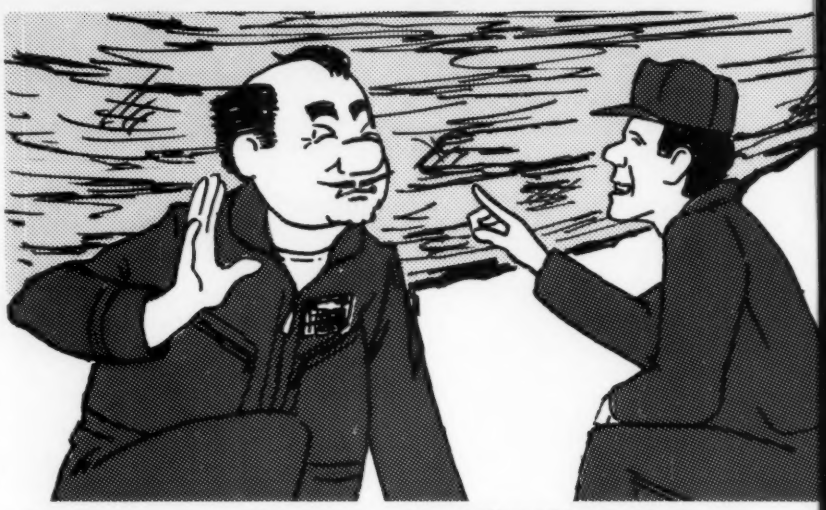
"Absolutely superior, Samuel," chirped the Ingratiating Ingrate. "I've alerted the traffic folks to our impending arrival and they promise to have the K-loaders standing by. Sergeant Downs, are you ready in the rear to push those last two pallets out the petal doors as soon as we get this B-mod beauty in the blocks?"

"I'm ready and waitin', sir," answered the loadmaster, "and I've got three pax to deplane also."

"No sweat, load, the nav can take 'em into base ops while you handle the offloading chores. Lieutenant Donovan needs to do *something* to earn his keep this trip, heh, heh," quipped the Fatuous Foreflusher, flashing a faceteous big wink in Blinky's direction.

The navigator, who had moved into the jump seat to provide an extra set of eyeballs inside and outside the cockpit during the approach didn't have to wait until they were on the ground before getting a chance to make himself useful. "Unless my cheaters deceive me, boss," he advised, "we're several knots low on carded airspeed and it feels to my stomach like our sink rate might be a bit high, too."

Braving the Senior Skipper's icy stare, Sam piggybacked as diplomatically as possible on the nav's observation, "I think



the Blinker's got ya there, sir; you might at least try to crank that airspeed up about eight knots or we're gonna hit the runway like a ton of bricks."

"Oh, ye of little faith," groaned the Paunchus Pilot. "All I need to do is pull the nose up ever so slightly just before touchdown and you'll never even know when the wheels kiss the concrete."

The words were barely out of his mouth when C.R. honked back on the yoke to flare the Starlifter for landing. The heavy B-bird promptly planted itself firmly on the runway right at the threshold line with a resounding screech of protest from the Terrorized tires. There was also an alarming thump which seemed to have emanated from somewhere in the vicinity of the tail section.

Looking a bit more sheepish than he hoped he did, the Fabulous Fibber was quick to offer a lame excuse for the abrupt touchdown. "Those wind gusts are really ferocious today. All my headwind died right over the threshold and dropped me like a hot potato."

Choosing to ignore the embarrassingly transparent alibi, the copilot addressed his attention to the loadmaster. "How's everything in the cargo compartment, Sergeant Downs?" he asked as C.R. gingerly taxied along behind the "Follow Me" truck.

"Everything is fine on the inside," replied the loadmaster, "but I think we contacted the runway on touchdown. Sounded to me like the back end of the belly scraped a little."

"I'll check it out while we're offloading," volunteered Sergeant Torque.

While the AC and Sam went to scan the weather and notams for their next destination, and Blinky took care of the passengers, the engineer made a thorough examination of the Starlifter's underside. By the time the pilots returned, he had his assessment ready. "She's taken some paint and metal scrapes on her keester, Major, and I think a couple of them ought to be checked out by maintenance for possible structural damage. . . ."

"Lemme have a looksee before we make a hasty and perhaps unwise move in that direction, Mr. Engineer," C.R. directed after making a

sign for "Time Out" with his pudgy paws. Grunting audibly while he strained to extend his corpulent carcass far enough to see beneath the low slung Starlifter, he resurfaced after a minute or two with his own assessment. "Heck, Sergeant Torque, those are only little bitty scrapes—nothing to be concerned about at this stage of the game. If you're really worried, slap a little speed tape on 'em and put a note in the 781 for the folks back home so they'll apply a permanent patch later on. Otherwise, we'll end up camping out here at the boneyard while the experts spend two or three days making a lot of useless tests so they can eventually tell us what I already know — namely that our bird is okay."

"Whatever you say, sir, but let the record show that I strongly suggested we have the experts do their thing."

"Duly noted, sarge," allowed the Field Grade Fumbler. "Now, let's get this air machine buttoned up and hit the road. We've got many a mile to go this day, before we get back home, lads."

Twelve hours and three additional quickstops later, the Master Manipulator of Wires and Tires and his weary band were still on schedule as they lifted off for the last leg of the mission and began the 3 hour and 35 minute lap home. It was well into the wee hours before dawn when C.R. deftly guided their king-sized Starlifter down final at home station and accomplished a grease-job landing smooth enough to leave a flashlight balanced on the console standing upright. Sergeant Downs had to wake up his two remaining passengers to let them know it was time to disembark.

"What about a special maintenance debrief for the tail scrapes, Major Terror?" asked Sergeant Torque persistently as he and the AC gathered up their gear and prepared to exit the cockpit.

"You just let me worry about that, Max. It's very late and I don't feel like spending another hour or more out here at 2:30 in the a.m. sparring with wrench-benders about a couple of superficial skin abrasions on our airplane. The writeup in the 781 will suffice for now, and if anybody has questions later on, they know where to call me at a more civilized hour."

"You're the boss," conceded the engineer with a sigh of frustrated resignation.

"Really, sir, I didn't mean any harm by those things I said during my testimonial roast tonight," C.R. cringed defensively as 6-feet 4-inches of irate lieutenant colonel backed him up against the wall. They were outside the room where the squadron's semi-monthly Hail and Farewell party was in full swing.

"I didn't get you out here to critique your cornball comedy capers, Major, even though you did have quite a few laughs at my expense," fumed Colonel Rheem in an even, icy tone of voice with the cutting edge of a straight razor. "I just got a call from the Wing DO about an airplane you flew yesterday. It seems there was some damage to the aft end of the belly.

"Those little scrapes, sir? I can assure you they were only superficial abrasions in the aluminum which we were able to cover nicely with speed tape so as to complete our mission with no problem," babbled the Bibulous Buffoon.

Closing the already narrow gap between C.R.'s pudgy proboscus and his own eagle beak to a mere quarter of an inch, the overtemped 0-5 silenced the simpering major with a menacing slice of his hand through the air. "According to the DO, those 'little scrapes,' as you call them, are only the tip of a maintenance iceberg. Several structural members around them were cracked or damaged. You didn't even log a hard landing or ground contact or make a thorough enough writeup in the 781 to alert the maintenance folks to the fact that there might have been a chance for some serious damage. I don't understand how you, with your years of experience, could jeopardize the lives of your crew and passengers, not to mention a valuable air machine, by flying with such a potential hazard. Then you left it as a dangerous trap for another crew. That is an unforgivable abomination, Major Terror!"

"But sir, I assumed that . . ." C.R. weakly attempted to interject a defense before he was again silenced by the colonel, whose nose was now smack up against the Shredded Skipper's snozzola, forcing the back of his balding pate into the wall.

"I've heard all I care to hear out of you for now, Terror, and in the interests of lowering my already off-scale high blood pressure, I don't want to see your miserable countenance again until bright and early in the morning. You and I and the squadron commander will be marching over to see the wing commander and explain what happened yesterday. After that we'll decide how many layers of epidermis we're going to flay from your overabundant posterior as step one of the corrective action for your flagrant transgressions."

Confusion in the Cockpit

Efforts to spot conflicting traffic for a parallel runway while they were preparing for landing caused an airline crew to miss the outer marker callout and the checks that went with it. When tower notified the crew of additional helicopter traffic beneath them, their attention was further directed outside the cockpit. The ground proximity warning sounded off at about 500 feet AGL because the gear had not been lowered, but the crew disregarded the initial alert because someone commented that the GPWS had given a false alarm on that particular airplane on a previous flight. Shortly thereafter, radio advisories from tower and another aircrew succeeded in getting the message across to the fumbling flyers that their jetliner's wheels were still in the wells. In the ensuing confusion, the first officer lowered the gear without command just as the captain was initiating a go-around. After sorting things out during a circuit around the pattern, the flight returned for a safe landing. One's mind boggles at the opportunities for a disaster in this hairy little episode, and also at the lessons to be learned. Reread and take heed, MAC amigos.

--Adapted from *Crosscheck*

QUICK STOPPERS

Enduring Insight Dept.

Coming down is the most critical part of flying.

–Orville Wright to (then) Lt Benjamin D. Foulois, *circa* 1910

A Matter of Degree

A 60-mile gross navigation error occurred after the captain of a commercial jetliner correctly read back a revised oceanic clearance but incorrectly recorded the new track coordinates which were a part of it. Neither the first officer nor the flight engineer, who were busy with other duties at the time, monitored the clearance. Part of the new routing was erroneously recorded on the flight plan as "Cork, 52N-15W, 53N-20W," although clearance delivery tapes captured the captain reading back the 20W latitude correctly as 52N. The first officer checked the new INS coordinates, programmed them, and the flight continued normally until the crew reported their ETA for 53N-20W. ATC immediately attempted to contact them and let them know they were supposed to be heading for 52N-20W, but controllers were unable to raise them. The flight was eventually reached by a communication relay from another aircraft, but by then it had already passed 20W some 60 miles north of the appropriate track. This time the experience was only embarrassing, even though the crew had less than standard separation between their jumbo jet and two eastbound flights as a result of the captain's slip-up. Under slightly different circumstances the margin for error might not have been enough to preclude a disaster.

Rolling Shock

As the Starlifter accelerated for takeoff, the strain on the chains holding a 2.5-ton cargo truck was too much and two of the 25,000-pound tiedown fittings ripped out of their floor receptacles. The big truck lurched aft, hitting a trailer and causing two of the 10,000-pound chains that secured the trailer to fail and come loose. Fortunately, all the other restraints held. But all this was little comfort to a passenger seated in a troop seat alongside the truck. His foot happened to be in the way when the vehicle unceremoniously slipped its surly bonds.

Golf Is A Lot Like Flying— Especially the Approach Shots

Gary Player, as he was competing in a tournament, hit his approach shot into a sand bunker. The ball was buried so deep he could barely see the top of it. He calmly surveyed the situation, took out his sand wedge, and proceeded to knock the ball out of the trap and into the cup with one smooth swing of the club. As he was striding off the green, a spectator hollered, "Boy, Gary, that sure was a lucky shot." Player looked up into the crowd and said, "You know, the more I practice, the luckier I get." The same could be said of aviators, but with less mission flying now-a-days, we sometimes don't get as much practice flying as we'd like. So, when we do get a chance to sharpen our aerial expertise, we ought to get all we can out of it. Exchanging ideas and techniques for performing different maneuvers and tailoring training rides to fill our needs for both instrument and emergency work can go along way toward closing the gap between being just qualified and being truly proficient. With meaningful practice, maybe you will be "lucky" at aceing every approach, even under emergency conditions.

–Adapted from ATC *Flight Safety*

Tell the Flight Surgeon

How many of you MAC flyers know of some crewmember who has had medical problems, but didn't bother to report them to the friendly flight surgeon for fear of being grounded? Probably quite a few. Listen to this sad story and think about it the next time you or a friend may be tempted to bypass the fly doc.

A Navy P-3 pilot was having trouble understanding radio transmissions, and had recently experienced two episodes of vertigo on takeoff after rapid head movements. Some members of his crew were aware of his problem, but neither he nor his crew reported the difficulty he was having.

Six months later, during his annual physical, he was questioned by the flight surgeon and said he was having no trouble and was feeling fine. During the hearing test, however, the doctor detected a high-frequency hearing loss in one ear. Since the hearing loss had occurred since the pilot's last physical he decided to investigate further. Finally the pilot reluctantly divulged the problems he had been having. Extensive evaluation revealed a tumor on the auditory nerve. It took a neuro-surgeon six hours to remove the growth and fortunately, it was benign.

This pilot survived his experience, although the tumor had wrapped itself around both the auditory nerve and adjacent facial nerve—both of which had to be destroyed in order to remove the tumor. Now he is deaf in one ear and half his face is paralyzed. If he had reported his symptoms when they first occurred, the facial nerve may well have been spared. In truth, this individual got off better than might have been expected. Are you willing to take the same chance?

Midair Aerobatics

After giving the rescue helicopter a heading and a recommended altitude of 6,300 feet for radar vectors to a localizer approach to the air base, approach control instructed the crew to maintain VFR. At the same time a Convair 440 (on an IFR clearance) was flying inbound at 6,000 feet for a VOR approach to the nearby municipal airport. A passenger in the back of the helicopter saw that the civilian airplane was closing on them fast from the four o'clock position and mentioned it to the pilot. Attempting to keep the other aircraft in sight, the chopper pilot began turning right. After realizing the Convair was apparently not going to alter course, the UH-1 driver lowered the collective, cracked the throttles and tightened the turn to avoid a midair collision. The Convair passed directly behind and only slightly above the helicopter which unfortunately suffered a rotor rpm overspeed and above-red-line torque while the crew was momentarily distracted by the situation. Such ingredients as the IFR-VFR traffic mix in the same airspace, similar altitudes, and aircraft flying different instrument approaches under the same approach control while talking on different radios made this situation a prime contender for a catastrophe.

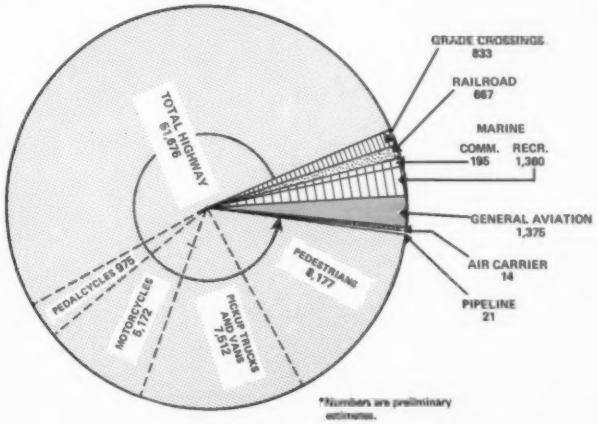
AFTER DEADLINES

ICAO OKAYS MLS AND ASA. The International Civil Aviation Organization (ICAO) reached agreement on standards and recommended practices for the microwave landing system (MLS) at a recent meeting in Montreal. It also agreed on a first draft of an international transition plan for converting to MLS from ILS, which has been the world's standard electronic landing system since 1949. Don't look for sweeping changes immediately, however, because even with ICAO's go-ahead, it will be several more years before MLS can be fully implemented worldwide, according to the chairman of the U.S. delegation. The group also gave full support to continued development of the U.S. aircraft separation assurance program (ASA), and agreed on a set of proposals to guide further development of worldwide collision prevention and avoidance systems.

AVIATION DEATHS DECREASED IN 1980. Although the total number of deaths in all transportation modes (56,141 fatalities) remained essentially unchanged from 1979's figures, there was an encouraging decrease in the number of air carrier fatalities. They dropped from 355 in 1979 to only 14 in 1980. Overall, aviation fatalities decreased 20 percent to a total of 1,389. The pie-like illustration below graphically depicts how the various types of transportation compared in the 1980 standings.

1980 TRANSPORTATION FATALITIES*

NATIONAL TRANSPORTATION SAFETY BOARD



STARTLIFTERS LOG OVER SIX MILLION HOURS. At the speeds they fly, that works out to about 3,000,000,000 miles of straight line travel for MAC's fleet of 269 workhorses. The C-141s, which joined the Air Force in 1965, are currently undergoing major modifications which increase cargo carrying capability substantially and add aerial refueling apparatus for extended range. At present, about half the fleet has been converted to "B" models, with completion of the modification program expected by mid-1982.

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